PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference PH-2377-PCT	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/JP2005/003010	International filing date *(day/month/year)* 24 February 2005 (24.02.2005)	Priority date *(day/month/year)* 27 February 2004 (27.02.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TORAY INDUSTRIES, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

   - ☒ Box No. I — Basis of the report
   - ☐ Box No. II — Priority
   - ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☒ Box No. IV — Lack of unity of invention
   - ☒ Box No. V — Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI — Certain documents cited
   - ☐ Box No. VII — Certain defects in the international application
   - ☐ Box No. VIII — Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 19 September 2006 (19.09.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Yoshiko Kuwahara e-mail: pt07@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference **PH-2377-PCT**	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2005/003010	**24.02.2005**	**27.02.2004**

International Patent Classification (IPC) or both national classification and IPC

Applicant
TORAY INDUSTRIES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV — Lack of unity of invention
- ☒ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☐ Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP	Authorized officer
Facsimile No.	Telephone No.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/003010

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ in written format

      ☐ in computer readable form

   c. time of filing/furnishing

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in computer readable form.

      ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/003010

Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:

   ☐ paid additional fees

   ☐ paid additional fees under protest

   ☐ not paid additional fees

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

A matter common to the epoxy resin composition of claim 1, the carbon fiber-reinforced composite material plate of claim 17, the integrally molded article of claim 18 and the fiber-reinforced composite material plate of claim 27 is that reinforcing fibers and a thermosetting resin are contained. However, it is evident that this matter is not a novel technical feature of the respective inventions which defines a contribution over the prior art. Furthermore, it is considered that a person skilled in the art would not have recognized on the filing date of the present application that a specific concentration has a close relation with the flame retardancy corresponding to V-1 or V-0. So, since the respective inventions do not have a common technical feature in the sense of PCT Rule 13.2, they are not considered to be so linked as to form a single general inventive concept.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☒ all parts

   ☐ the parts relating to claims Nos. _____

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/003010

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2, 9-12, 14, 18-49	YES
	Claims	1, 3-8, 13, 15-17	NO
Inventive step (IS)	Claims		YES
	Claims	1-49	NO
Industrial applicability (IA)	Claims	1-49	YES
	Claims		NO

2. Citations and explanations:

Document 1: JP, 2003-20410, A (Toray Industries, Inc.), 24 January, 2003 (24.01.03)
Document 2: WO, 2002-050153, A1 (Mitsubishi Rayon Co., Ltd.), 27 June, 2002 (27.06.02)
Document 3: JP, 10-110087, A (Chisso Corp.), 28 April, 1998 (28.04.98)
Document 4: JP, 9-323372, A (Toray Industries, Inc.), 16 December, 1997 (16.12.97)

The subject matters of claims 1, 13, 15 and 16 do not appear to be novel, since they are described in documents 1-3 cited in the ISR. Documents 1-3 respectively disclose a flame retardant epoxy resin composition containing a predetermined concentration of a phosphorus compound or phosphorus and an amine-based curing agent, and also describe that a composite material is formed together with carbon fibers.

The subject matters of claims 2, 11, 12 and 14 do not appear to involve an inventive step in view of documents 1-3 cited in the ISR. A person skilled in the art could have, as required, adjusted the viscosity of a resin composition in relation with a molding method. Moreover, a person skilled in the art could have, as required, adjusted the curing rate and specific gravity of a resin and the fiber content of a composite material, considering working convenience and the application of a cured product.

The subject matters of claims 3-7 do not appear to be novel, since they are described in document 3 cited in the ISR. Document 3 discloses that red phosphorus or red phosphorus covered with a metal hydroxide and/or a resin is used as a flame retarder.

The subject matter of claim 8 does not appear to be novel, since it is described in document 2 cited in the ISR. Document 2 discloses an example in which a compound having a urea bond is used as a curing accelerator.

The subject matters of claims 9 and 10 do not appear to involve an inventive step in view of documents 1-3 cited in the ISR. A person skilled in the art could have easily mixed a curing accelerator publicly known before the filing date of the present application with an epoxy resin, to use the mixture.

The subject matter of claim 17 does not appear to be novel, since it is described in documents 2 and 3 cited in the ISR. Documents 2 and 3 respectively disclose a composite material plate with a thickness of 2 mm or less having flame retardancy corresponding to V-1 or V-0.

The subject matters of claims 18-49 do not appear to involve an inventive step in view of documents 1-4 cited in the ISR. Document 4 discloses a housing for an electric or electronic

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

apparatus, obtained by sticking a carbon fiber reinforced composite material and a thermoplastic resin layer containing reinforcing fibers to each other. A person skilled in the art could have easily used the carbon fiber composite material using an epoxy resin composition described in any one of documents 1-3 as the carbon fiber reinforced composite material used in the housing described in document 4.